

U.S.S.N. 10/773,916

Filed: February 6, 2004

AMENDMENT UNDER 37 C.F.R. § 1.312

**In the Claims**

1. (previously presented) A recombinant host having stably incorporated into the genome a gene encoding a heterologous 4-hydroxybutyryl-CoA transferase, wherein the host is selected from the group consisting of a plant, plant cell, and plant component.
2. (currently amended) The host of claim 1 having stably incorporated into its genome both a gene encoding a polyhydroxyalkanoate synthase and a gene encoding a 4-hydroxybutyryl-CoA transferase.
- 3-4. (cancelled)
5. (previously presented) The host of claim 1 further comprising genes expressing enzymes selected from the group consisting of beta-ketothiolase, acetoacetyl CoA reductase, polyhydroxyalkanoate synthase,  $\alpha$ -ketoglutarate transaminase, glutamate-succinic semialdehyde transaminase, glutamate dehydrogenase, glutamate decarboxylase, and 4-hydroxybutyrate dehydrogenase.
6. (previously presented) A method for enhancing production of polymers containing 4-hydroxybutyrate in a host comprising  
stably incorporating into the genome of the host a gene encoding a 4-hydroxybutyryl - CoA transferase, wherein the host is selected from the group consisting of a plant, plant cell, and plant component.

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7. (currently amended) The method of claim 6 wherein the host has stably incorporated into its genome both a gene encoding a polyhydroxyalkanoate synthase and a gene encoding a 4-hydroxybutyryl-CoA transferase.

8. (original) The method of claim 6 further comprising enhancing expression of the heterologous enzyme.

9. (cancelled)

10. (currently amended) The method of claim 6 ~~further comprising providing a~~ wherein the host expressing expresses enzymes selected from the group consisting of  $\alpha$ -ketoglutarate transaminase, glutamate-succinic semialdehyde transaminase, glutamate dehydrogenase, glutamate decarboxylase, 4-hydroxybutyrate dehydrogenase and 4-hydroxybutyryl CoA transferase.

11. (currently amended) The method of claim 6 ~~further comprising providing a~~ wherein the host expressing expresses enzymes ~~that degrading~~ degrade arginine, glutamine or proline to produce gamma amino butyric acid.

12. (previously presented) A 4-hydroxybutyrate polymer produced by a recombinant host having stably incorporated into the genome a gene encoding a heterologous enzyme selected from the group consisting of a polyhydroxyalkanoate synthase and a 4-hydroxybutyryl-CoA transferase, wherein the host is selected from the group consisting of a plant, plant cell, and plant component.

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13. (previously presented) A vector comprising an isolated gene encoding a 4-hydroxybutyryl-CoA transferase under the control of a promoter for enhancing expression of the gene encoding the 4-hydroxybutyryl-CoA transferase after integration of the promoter and gene encoding the 4-hydroxybutyryl-CoA transferase into the genome of a heterologous host, wherein the host is selected from the group consisting of a plant, plant cell, and plant component.

14. (previously presented) The recombinant host according to claim 1 wherein the plant cell or plant component is obtained from said plant, and wherein said plant is selected from the group consisting of brassica, sunflower, soybean, corn, safflower, flax, palm, coconut, potato, tapioca and cassava.

15. (previously presented) The method according to claim 6 wherein the plant cell or plant component is obtained from said plant, and wherein said plant is selected from the group consisting of brassica, sunflower, soybean, corn, safflower, flax, palm, coconut, potato, tapioca and cassava.

16. (previously presented) The 4-hydroxybutyrate polymer according to claim 12 wherein the plant cell or plant component is obtained from said plant, and wherein said plant is selected from the group consisting of brassica, sunflower, soybean, corn, safflower, flax, palm, coconut, potato, tapioca and cassava.

17. (previously presented) The vector according to claim 13 wherein the plant cell or plant component is obtained from said plant, and wherein said plant is selected from the group consisting of brassica, sunflower, soybean, corn, safflower, flax, palm, coconut, potato, tapioca and cassava.

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18. (previously presented) A recombinant expression system comprising a host having stably incorporated into the genome, a gene encoding a heterologous enzyme selected from the group consisting of a polyhydroxyalkanoate synthase and a 4-hydroxybutyryl-CoA transferase, and a feedstock comprising a substrate for the polyhydroxyalkanoate synthase and 4-hydroxybutyryl-CoA transferase selected from the group consisting of carbohydrates, succinate, 4-hydroxybutyrate,  $\alpha$ -ketoglutarate, and amino acids, wherein the enzyme expression and substrate are in a sufficient amount to produce polyhydroxybutyrate-co-poly-4-hydroxybutyrate or poly-4-hydroxybutyrate.

19. (previously presented) A method for enhancing production of polymers containing 4-hydroxybutyrate in a host comprising stably incorporating into the genome of the host, a gene encoding a heterologous enzyme selected from the group consisting of a polyhydroxyalkanoate synthase and a 4-hydroxybutyryl-CoA transferase;

providing the host with a feedstock comprising a substrate for the polyhydroxyalkanoate synthase and 4-hydroxybutyryl-CoA transferase selected from the group consisting of carbohydrates, succinate, 4-hydroxybutyrate,  $\alpha$ -ketoglutarate, and amino acids, wherein the enzyme expression and substrate are in a sufficient amount to produce polyhydroxybutyrate-co-poly-4-hydroxybutyrate or poly-4-hydroxybutyrate.